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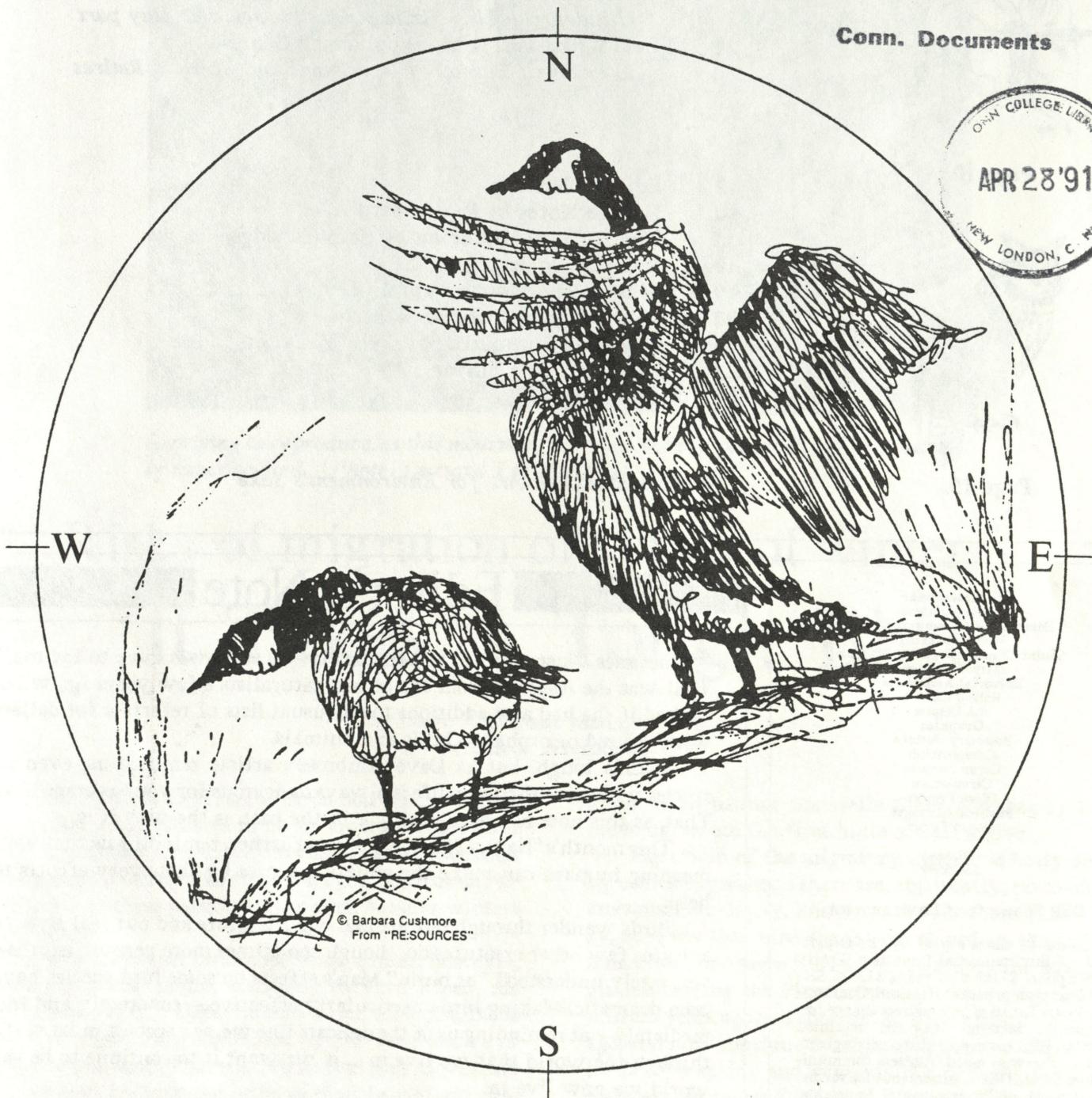
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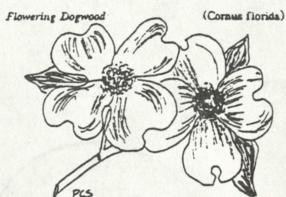


Moving and Shaking...
Weathering Winter

March 1991

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Page 10.



Page 15.

Features

- 3 **Winter Is No Picnic for the Birds** by Dave Ambrose
 Going South is Just One of their Survival Strategies
7 **D.E.P., Polluters, and the Law** by Anne Rapkin
 How an administrative agency enforces laws, orders, permits
12 **Water Saving With Minimal Life Change** by Denise Ruzicka
 Utilities, plumbing fixture industry, agencies play part
21 **Les (Whitham) Is More** by Roland Charest
 Director of Bureau of Operations and Services Retires

- 2 **Editor's Note**
10 **Nature Notes** by Penni Sharp
15 **The Natural Historian** by Carol Davidge
18 **Bulletin Board**
19 **Map of the Month** by Alan Levere
22 **Night Sky** by Francine Jackson
23 **Trailside Botanizing** by Gale W. Carter
23 **Letters to the Editor**
23 **Endnote**

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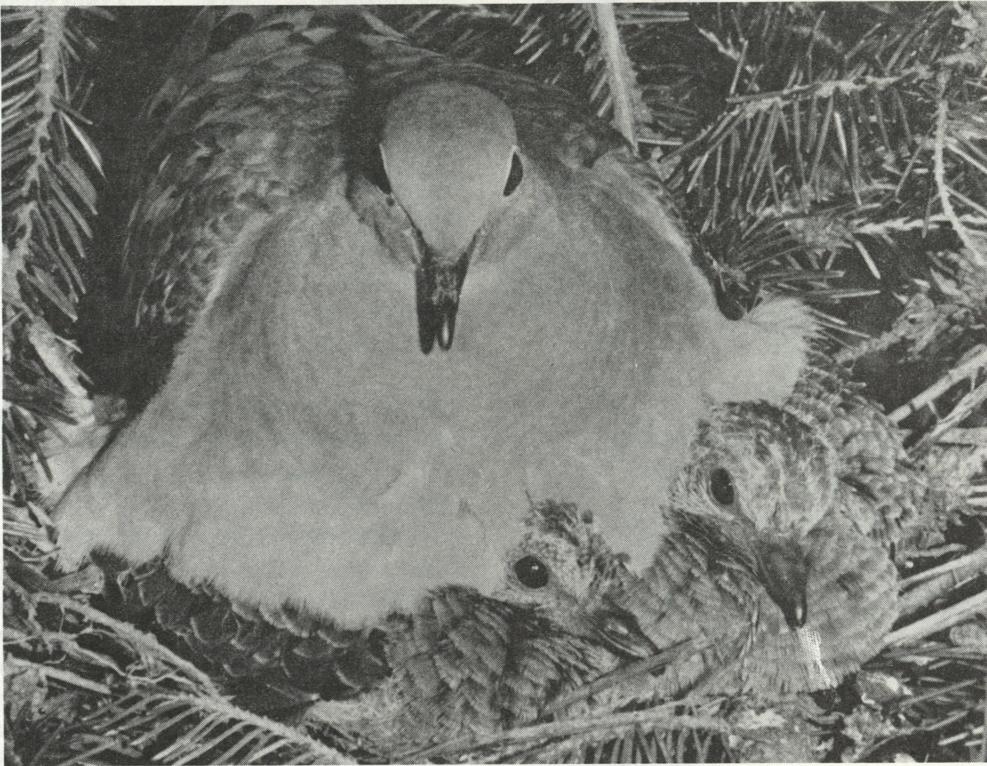
Editor's Note

"Sometimes I just want to tell them, 'Hawks and owls have to eat too.'" That was the response from one of our naturalists a few years ago when I asked if she had any additions to our usual lists of referrals for callers with injured or orphaned birds and animals.

Sounds tough, but as Dave Ambrose's article reminds us, even in species which are thriving, life is always dangerous for your average bird. That, as this note has reminded you in the past, is the way it is.

This month's "Natural Historian" goes further, reminding us that well meaning humans can make the situation worse by their very efforts to help.

Birds wander through our art and our literature and our real lives to a degree few other creatures do, though sometimes more personified than accurately understood "as birds." Man's effects on some bird species have been dramatic. Making birds particularly effective -- concretely and immediately -- at reminding us of the delicate line we, as a species, must walk through the world that we live in ... if we want it to continue to be the world we now live in.



Surviving to reproduce, as this mourning dove has, takes a physically and genetically superior bird. (Photo: Leonard Lee Rue III)

Risks of migration or rigors of winter . . . It Takes A Tough Bird

by Dave Ambrose, Managing Editor,
Outdoor Highlights

SOME BIRDS DO IT, some birds don't. Long before winter grips this area in its icy embrace, some birds migrate to warmer climes, while others prefer to weather it out here. Still others like the dark-eyed junco or snowbird migrate to these parts to escape even harsher winters further north.

The way in which birds cope with winter, however, is not a matter of choice, according to Vern Kleen, the Illinois Conservation Department's avian ecologist. Birds that migrate south are compelled by the very nature of their biology to do so. Likewise, those that stay to weather the bitter cold are reacting only to their behavioral pro-

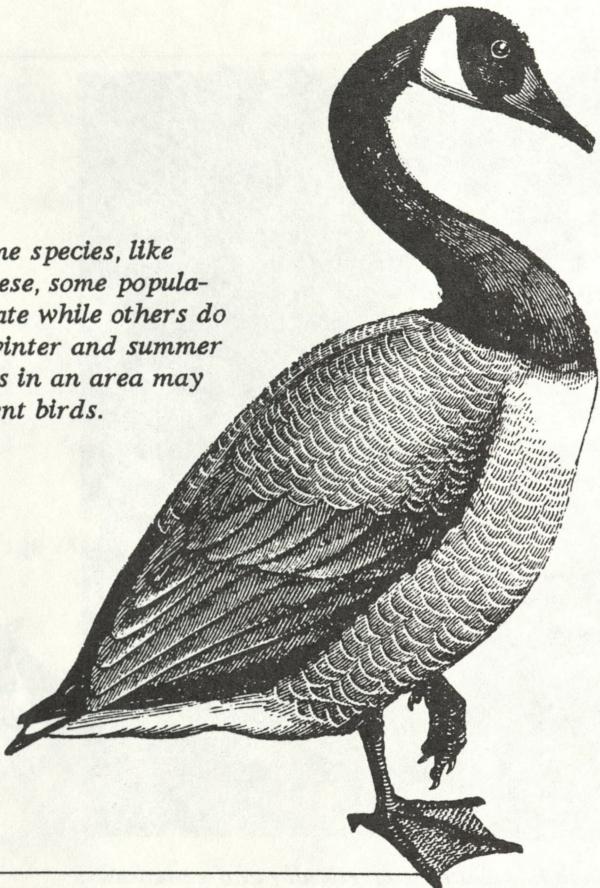
gram. It is instinct that tells them whether to stay or move on before the first hints of fall arrive.

The origin of the migratory instinct is hotly debated by ornithologists and there are, apparently, no conclusive answers. One theory, known as the Northern Home Theory, suggests that bird species developed in the northern temperate zone were forced southward by the advance of glaciers during the Pleistocene Age, beginning about one million years ago and continuing until about 11,000 years ago, and now continue to migrate to their northern homelands each spring and summer. An opposite view is the Southern Homeland Theory, which holds bird species evolved in the southern temperate zone but were forced to expand their ranges into the northern temperate zone when the approach of fall and winter forces them from the northern temperate zone.

Neither theory addresses the phenomenon of east/west migration that occurs in some species, nor does it satisfactorily explain why some species migrate and others don't.

Reprinted, with permission, from *Outdoor Highlights*, Feb. 5, 1990 (Vol. 18, No.3), published by the Illinois Department of Conservation. We've added, in brackets, comments by D.E.P. wildlife biologists on several species you're less likely to see in Connecticut.

Within some species, like Canada geese, some populations migrate while others do not. And winter and summer populations in an area may be different birds.



SCIENTIFIC SPECULATION is equally unsatisfactory when it comes to explaining the hows of migration. Some researchers suggest declining periods of daylight that signal the approach of fall stimulate migratory behavior through the biological phenomenon called photoperiodism. Others say the start of migratory flights by birds are timed to coincide with the approach of significant weather fronts that foreshadow a change of seasons. The dwindling food reserve at the start of winter is said by some scientists to be the motivating force that drives birds to migrate.

Each of these theories holds some grain of truth, but some bird species migrate southward regardless of the length of day or weather conditions, and most migrate well before food supplies disappear.

Further confusing the migration issue is the fact that it is not necessarily species-specific behavior. Some populations within a species may migrate while other populations do not, apparently depending on where the population makes its home.

Some species cloud the issue by migrating relatively short distances within their ranges, sometimes creating the illusion that they are year round residents.

"The robins that are here in the winter, for example, are not the same robins that were here last spring and summer," Kleen said. [According to D.E.P.'s wildlife biologists, you won't see too many robins in Connecticut during winter ... and probably see fewer robins year around than Midwestern residents do ... despite the robin's being Connecticut's state bird.] The song sparrow is another Illinois bird that migrates south for the winter only to be replaced by its cousins from farther north.

Winter residents — birds that migrate from the north into this area — include several species of waterfowl and a few raptors, such as the rough-legged hawk and the American bald eagle. The yellow-bellied sapsucker, red-breasted nuthatch, brown creeper, golden-crowned kinglet, American tree sparrow, fox sparrow, white-throated sparrow, Lapland longspur [this would be a rare bird sighting in Connecticut], purple finch and dark-eyed junco (or snowbird) also are among the winter residents that apparently find our winters preferable to those farther north.

NO SINGLE THEORY may be adequate for understanding why migration occurs. It may be that migratory behavior results from a complex brew of stimuli now lost to the eons.

The availability of food appears to be a key component in migration. According to Joel Carl Welty, author of *The Life of the Birds*, migration may help ensure the equitable distribution of food resources.

"If all the birds that migrate should instead remain in their winter quarters the year around, they and the normally resident birds would make great demands on the food supply, and many birds might have difficulty in nourishing their young while rich food resources in the northern habitats remain untouched," Welty wrote.

Indeed, the availability of food almost certainly plays a role in which species migrate and which ones don't. Most, but not all, the bird species that leave for the winter are species that feed exclusively upon insects. When the approach of winter threatens the availability of flying insects, these species move on to warmer climates.

"Birds like the warblers, flycatchers, swallows, nighthawks and chimney swifts that depend on insects have learned to be long gone long before the food supply is depleted," Kleen said. "You can't fly 300 or 400 miles a day without food."

These migratory species are remarkably well adapted for their method of dealing with winter. Migratory species often have longer, more pointed wings than year-round residents — a biological streamlining that helps them complete long distance, non-stop flights each spring and fall. Prior to the flight, most migratory birds go through a period of intense feeding to build up body bulk and fat reserves for fuel. Some migratory species have been shown to have lost 30 to 40 percent of their body weight by the time they arrive at their destination.

Of the bird species that stay here to weather winter, most depend on nuts and seeds for food. But some year-round residents are omnivores, able to subsist on both plant and animal materials. Chickadees and titmice are among the seed eaters that remain. Woodpeckers and nuthatches, also year-round residents, survive on a diet of seeds supplemented with the few grubs they are able to find under the loose bark of trees.

In all, nearly 100 bird species — winter residents and year-round residents — are found regularly in Illinois [and similarly in Connecticut] during the winter months.

Virtually all of them depend on a fascinating array of behavioral strategies and physiological adaptations to help them find enough food and stay warm enough to survive the winter.

"Any species that is here year round has, through the evolutionary process, adapted and is able to cope with the season," Kleen said. "If they haven't adapted, they die."

Kleen's favorite example of an adaptation for winter survival is the common cardinal, a familiar sight to almost anyone who notices birds in winter.

"In winter, cardinals are dependent on seeds for food," said Kleen. "That's why they have that big, thick bill. It's an adaptation for cracking seeds."

For birds wintering in northern states to survive they must be able to find adequate food and shelter and they must employ a number of strategies to conserve their body heat. Like other animals, birds convert food to energy to generate body heat. Normal body temperature for a bird hovers between 100 and 112 degrees, which means their metabolism must be extremely active to maintain proper body temperature. Pound for pound, ounce for ounce, birds eat more food, consume more oxygen and generate more body heat than other vertebrates.

WHEN TEMPERATURES FALL, a bird's metabolism must work harder to maintain body temperature and that means more food must be consumed.

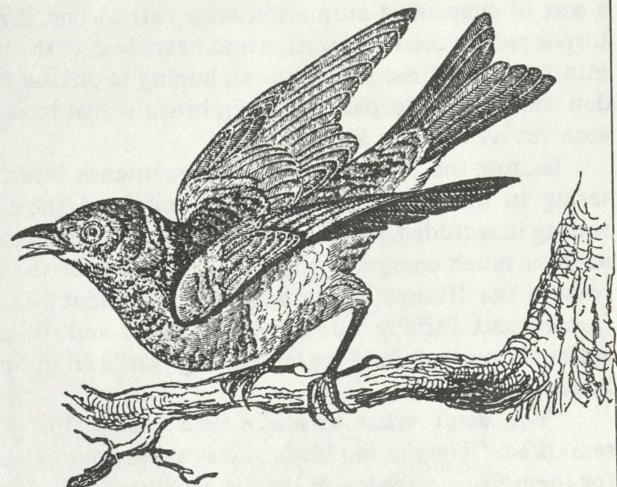
Let's return to our example of the cardinal. The cardinal's "comfort zone," the range in which metabolic heat production is at its minimum, is between 60 and 90 degrees. At minus 4 degrees its metabolic demands for adequate body heat are doubled. Obviously, it makes sense for such an animal to do all it can to conserve heat.

Not surprisingly, many year-round resident species have stouter, more compact body masses than their tropical counterparts. A lower ratio of body surface to body weight is a biological adaptation that eases the task of getting the body warm and keeping it that way.

Feathers, the avian equivalent of fur, are a bird's first line of defense against the cold. Fluffing the feathers to trap air spaces between them and the bird's flesh is a common way of increasing their insulating capacity. When you see a robin or cardinal the shape and size of a tennis ball, you are observing one of the most common ways birds counteract the cold.

"Some people may see a robin that's all fluffed up and say, 'Boy, that's a big robin!'" said Kleen. "It's actually not any bigger than any other robin; it just looks bigger because it's all fluffed up."

Feathers are liabilities, though, if they become wet. Like damp home insulation, wet feathers are useless for retaining heat. During the blizzard winters of the 1970s, the Illinois countryside was dotted with scores of dead pheasants that had succumbed to the elements when snow whipped up under their feathers and robbed them of their insulative powers. [Few pheasants successfully winter over in Connecticut.]



Bluebirds are among those birds that huddle together to conserve heat and thus lessen the amount of food they need to survive cold winter weather.

Quail are known for their habit of huddling together on cold nights to take advantage of collective body heat. But other birds engage in the practice as well.

"Sometimes a bunch of bluebirds will get together and huddle up in a bluebird box," said Kleen. "You can open the top of the box and see them all huddled together in there."

In experiments with starlings in 1965, researchers found that the metabolism of birds roosting singly in temperatures minus 4 to minus 6 had to work 92 percent harder to keep warm than that of birds roosting in huddled groups of four. A single bird roosting at night at such temperatures could expect to live one day without food. In a group of four, the same bird could survive three days.

The unfeathered lower extremities of a bird's leg naturally dissipate a lot of heat, but nature has compensated on the side of survival here, too. First, the legs and claws of most birds are protected by a tough, scaly skin that differs from the skin covering the rest of the body. Further, the area has few muscles or blood vessels that would make it vulnerable to the cold; instead one major artery supplies the blood for each leg and tendons take the place of muscle.

BUT EVEN MORE REMARKABLY, many birds are equipped with a bundle of arteries and veins that control bloodflow to the legs and therefore control heat exchange between the extremities and the body core. This mechanism allows the bird to reduce blood flow to the feet and legs to just enough to keep them from freezing, thereby reducing the volume of chilled blood returning to the body cavity where vital organs are located.

Shivering is another behavioral adaptation birds can use to generate heat. The involuntary shivering stimulates the metabolism to produce more body warmth.

If all else fails, some birds have a capacity for entering a sort of suspended animation state call torpor. Birds in torpor reduce their respiration and heart beat to the barest minimum required for survival, hoping to outlast a sudden cold snap. A torpid bird taken into a warm room will soon revive and fly about.

Because the avian metabolism is so intense, birds wintering in northern climates spend much of their time resting in secluded, protected roosting areas, trying to conserve as much energy as possible. This is one of the main reasons the Illinois Conservation Department [like the Connecticut D.E.P.'s Bureau of Fisheries and Wildlife] zealously protects bald eagle "loafing" areas from human intrusion.

"You don't want to make bald eagles fly," Kleen remarked. "They're big birds and it takes a lot of energy for them to get airborne. If they're short on food, unnecessary flight may expend energy they will critically need later to find food."

As might be expected, finding enough food to fuel their insatiable metabolisms is one of the biggest problems facing wintering birds. Bird enthusiasts can help by providing well maintained bird feed stations in their back yards.

A house or tube feeder elevated on a pole and filled with black oil sunflower seeds will attract cardinals, nuthatches, jays, woodpeckers, purple finches, titmice, thrashers [though most of Connecticut's move south] goldfinches, juncos, doves and chickadees. Doves, blackbirds [Connecticut's redwings tend to return in February], juncos, towhees and pine siskins enjoy millet, fed from a platform or tray feeder, while peanuts will attract blue jays, grackles [though they don't patronize feeders much], titmice, house finches and chickadees. Pure raw suet will attract a variety of wintering birds and niger thistle seed will bring pine siskins, goldfinches and other finches.

BUT NO MATTER HOW MANY PEOPLE offer bird feeding stations to help wintering birds make it through the winter, most of the birds that are here at the beginning of fall will be dead before the coming of spring. For both migratory and year-round species, winter is the great leveler of bird populations.

The vast majority of the birds that migrate southward will perish before spring as well. They may not be strong enough to complete the trip, may be forced down by inclement weather or may fall victim to predators. Of the birds that remain behind, only the most robust individuals of each species will make it through the cold winter nights, will find enough to eat and will escape falling prey to other animals.

"It's survival of the fittest," said Kleen. "If they can survive winter, it means they are physically and genetically superior enough to survive and reproduce."

The epic losses of birds during the winter months would be devastating were it not for the fact that most bird species produce many more young than the population needs for survival.

"Only two adults have to survive to replace the parents," Kleen said. "If you have more than that, you have an increasing population. If you have less, the population is going to decline."

Robins, for example, may nest as many as three times in a summer, each time producing a brood of four young. Because robins typically live five years, a single female may be responsible for producing 60 young in her lifetime.

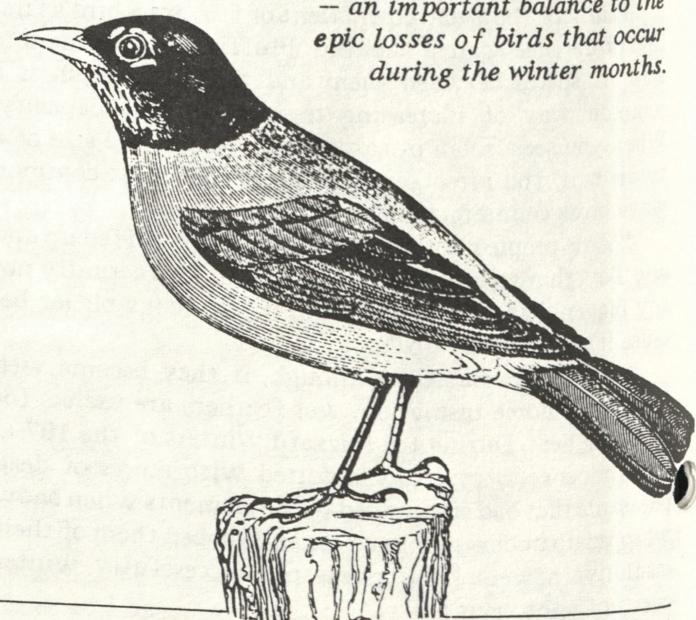
"Out of that 60 only two are going to survive in order to maintain the population," Kleen said.

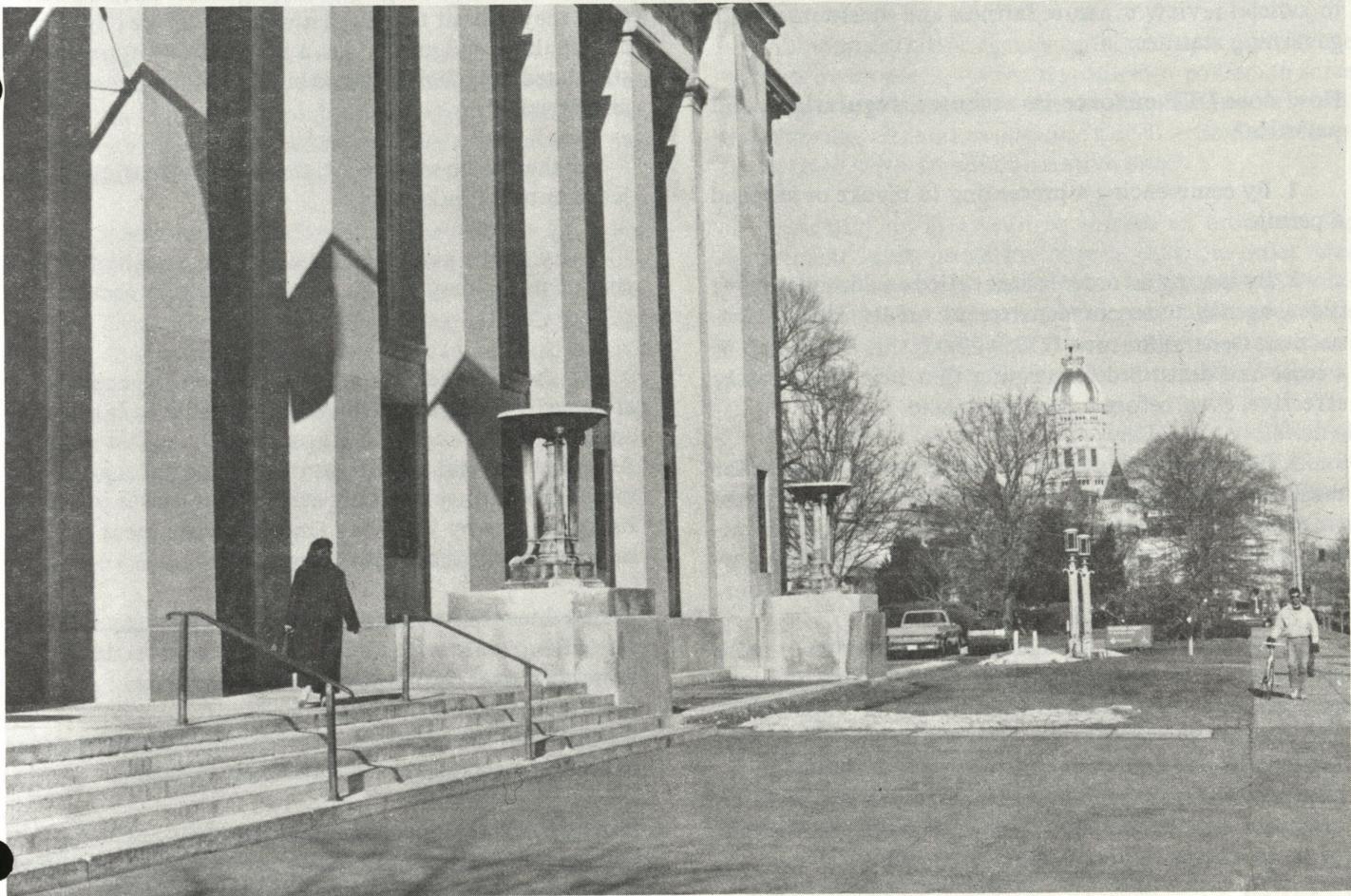
SO THOSE FAMILIAR friends returning to your back yard and forests all over the state this spring are the birds who managed to survive the rigors of winter or the risks of migration. Because of their strength, there will be birds to enjoy until next fall when a new generation prepares to undergo the test of survival against a hostile winter.

* * * * *

Get to know some local birds. "Winter Picnics Are For The Birds," the Division of Wildlife's 23 by 28 inch full color poster comes with an accompanying 40-page guide, "Discover Wildlife In Connecticut's Backyard" (which describes the species on the poster, offers feeding tips and habitat requirements), and a Connecticut wildlife checklist, listing all species found in Connecticut. It's available for \$5, check or money order (payable to "Connecticut D.E.P. Nonharvested Wildlife Fund," from "Discover Connecticut's Wildlife," P.O. Box 1238, Burlington, CT 06013.

A single female robin may produce 60 young in a five-year lifetime — an important balance to the epic losses of birds that occur during the winter months.





Most DEP legal actions are filed in Hartford Superior Court. (Photo: Rosemary Gutbrod)

Why don't we just throw that polluter in jail?

by Anne Rapkin,
Counsel to the Commissioner

A Guide to the Legal Enforcement Process

What is an administrative agency and what does it do?

Created by statute, administrative agencies have the responsibility of carrying out (i.e., "executing" or "administering") statutes. State agencies like the Department of Environmental Protection (DEP) are part of the "executive" branch of government and are often called "administrative agencies."

Among such agencies' executive functions is enforcement of statutes and of regulations adopted and permits issued under the statutes governing these agencies.

This article, which describes the DEP's powers and procedures for enforcing its statutes, regulations, orders, and permits, is excerpted from materials prepared for a series of seminars given for DEP staff by Anne Rapkin and Laurie Boynton of the Commissioner's legal staff.

Many actions of executive branch agencies are subject to judicial review to assure fairness and consistency with governing statutes.

How does DEP enforce its statutes, regulations and permits?

1. By commencing a proceeding to revoke or suspend a permit.

2. By issuing an order (often called an administrative order, agency order, or department order). Under Connecticut General Statutes (CGS) 22a-7, this order may be a cease and desist order, meaning that it is immediately effective, even before a hearing is held.

3. By referring a matter to the Attorney General for the filing of an action — i.e., a lawsuit — to enforce. (These are called “civil” actions to distinguish them from criminal prosecutions, which are brought by the State’s Attorney.)

In some situations the agency may take two or more of the above actions simultaneously. For instance, it might issue an order to abate pollution caused in violation of CGS 22a-427 and refer to the Attorney General for collection of a penalty. Or it might initiate proceedings to revoke a discharge permit for failure to comply with its terms and simultaneously refer to the Attorney General for an injunction and collection of a penalty.)

Civil enforcement actions

If an agency like the DEP refers a matter to the Attorney General to file a civil action, it can ask the court for an injunction or a civil penalty.

An injunction is any relief other than money. An injunction is either prohibitory (it orders defendant not to do something) or affirmative (it orders defendant to do something; an affirmative injunction is also called a mandatory injunction). It's important to note that DEP can ask for injunctive relief without closing down a facility! For example, DEP can ask the court to issue an injunction directing a defendant to install certain equipment or implement certain management practices.

A civil penalty (sometimes called a forfeiture) is termed “civil” to distinguish it from a criminal penalty.

What procedures are involved in a civil enforcement action?

The Attorney General serves on (i.e., delivers to) the defendant and files in court a complaint alleging the violations and asking the court for the desired relief.

This is followed by various pre-trial proceedings such as discovery, motions, etc.

Prior to trial, the parties may agree to settle the action. If so, they submit to a judge a motion that he or she enter a “stipulated judgment,” i.e., a judgment by agreement. A stipulated judgment is just as binding as judgment entered after trial.

If there is no settlement, the case goes to trial, and the judge enters a judgment.

Any of the parties to the case who is unhappy with the judgment may file an appeal in the Connecticut Appellate Court.

If the judgment is not appealed or, if appealed, is affirmed, the defendant must comply with it. If a defendant does not comply, the agency can request that the Attorney General initiate contempt proceedings. In contempt proceedings the court exercises its power to enforce its judgments by imposing fines, imprisonment or other sanctions such as seizure of assets.

When does DEP refer a case to the Attorney General for filing of a civil action rather than issuing a departmental administrative order?

1. When the requirements of an administrative order, including a consent order, have been violated.

2. When the department wants civil penalties. The DEP may issue an administrative order to abate pollution, restore a site, or take other action and simultaneously refer to the Attorney General for civil action to collect penalties.

3. When DEP staff strongly suspect that a violator won't obey an administrative order or may remove all his assets from the state or otherwise try to shield them; DEP will therefore want a court to exercise its powers over that violator's person and property as soon as possible.

4. When a person has committed violations which as a policy matter merit referral rather than administrative action, and the environmental problem is not so severe or imminent that its resolution cannot await the potentially long delays of the judicial process.

Other than in these circumstances, DEP generally issues an order to abate a violation or pollution rather than referring for filing of civil enforcement action.

Order vs. Consent Order

An order issued by the department unilaterally (i.e., without the respondent's consent) and a consent order (issued by the department with the respondent's consent) are equally enforceable. Both are enforceable by the court by injunction (i.e., a requirement that the order or consent order be obeyed). If a court's injunction is disobeyed, contempt sanctions may be available. If the governing statute

allows, the court may also impose civil penalties for violations of the order or consent order.

By entering into a consent order, the respondent waives his right to a department hearing. In any subsequent civil enforcement action, he may not challenge the findings or terms of the consent order.

A consent order is enforced by the court as an order, not as a contract, so the court may impose statutory non-compliance penalties for the violations involved in the consent order. However, a consent order is like a contract in that it's reached by negotiation and agreement, and it's also like a contract in that it can contain provisions which the department could not unilaterally order (e.g., specified future non-compliance penalties or measures in addition to those needed to remedy the violation).

Regular Order vs. Cease and Desist Order

A cease and desist order is issued under CGS 22a-7 when there are: (1) conditions or activities which are likely to substantially and imminently harm the environment or (2) substantial and continuous permit violations which would prejudice the public if corrective action were delayed until after a hearing.

The major difference between cease and desist order and a regular order is that a cease and desist order is effective upon receipt by the respondent, while a regular order is not effective until the appeal time (usually 30 days) passes without the filing of an appeal or, if an appeal is filed, until after the order is adjudicated in the department's favor or the appeal is resolved by the issuance of a consent order.

A hearing *must* be held, whether or not the respondent requests one, within 10 days after a cease and desist order is issued. Within 10 days after this hearing, a final decision must be rendered.

When is an order final?

"Final" means effective (the respondent must comply with it) and enforceable (a court will enforce it by injunction and/or imposition of civil penalties). If no administrative appeal is filed (i.e., there is no request for a department hearing), the order is final on the day after the last day for filing an appeal, generally the 31st day after the order was issued.

If an appeal is filed, the order is not final until it is resolved by consent order or there is a DEP hearing and a final decision in the department's favor. If a respondent does not appeal an order, the court will not entertain a challenge by the respondent to the order's findings or terms.

Judicial Enforcement of Administrative Order

An administrative agency cannot compel compliance with its own orders -- it has no contempt powers to force the respondent to comply. The department can only ask the Attorney General to institute a civil action to enforce compliance with an administrative order.

Generally, in a lawsuit to enforce an order, all the department must prove in court is that the order was violated. It does not have to prove the underlying violations described in the order; the court will accept the hearing officer's findings or, if the order was never appealed, will accept the findings set out in the order.

If DEP seeks a statutory civil penalty for violation of an order, it must present evidence justifying the amount of the penalty sought. A court's judgment will be enforceable by contempt; the court may, for example, jail a respondent or fine him for disobedience and may seize assets to satisfy the judgment.

Judicial review of final decision

If a respondent appeals an order, goes to a department hearing, and loses, he may petition the Superior Court for review of the department's final decision.

On judicial review, the respondent may raise questions about whether the evidence presented at the hearing supports the final decision, whether the Department followed all required statutory and regulatory procedures in adjudicating the order, and whether Department has exceeded its authority under applicable statutes or regulations. There is a heavy burden on the respondent to demonstrate that the final decision should not be upheld.

The court generally will not take additional evidence as to whether the factual findings and remedy prescribed in the final decision are correct. The court will consider only the record made by the parties during the hearing.

Filing of a petition for judicial review does not affect the finality (enforceability) of the final decision. The respondent may, however, request the Commissioner, and then the court, to grant a "stay" of the decision. If a stay is granted, the respondent will not be required to comply with the terms of the final decision until the court has determined whether or not it should be upheld. Neither the Commissioner nor the court often grants requests for stays.

Any party who is dissatisfied with Superior Court's judgment is entitled to appeal to the Connecticut Appellate Court; the Connecticut Supreme Court may, in its discretion, accept an appeal by a dissatisfied party from the Appellate Court's decision.

Nature Notes

The Forest Understory

Text and Illustrations
by Penni Sharp

CONNECTICUT IS, by and large, a forested state, and most of the remaining undeveloped lands are forest lands. Forests are complex habitats which provide a broad range of niches for wildlife.

In general, Connecticut forests can be grouped under the broad heading, Central Hardwoods, which describes one of the forest-regions of North America. The different regions are determined by climatic and latitudinal differences, and the Central Hardwood Forest Region has relatively abundant rainfall and moderate seasonally changeable temperatures.

Forests of this region tend to have well-developed layers. In a typical Connecticut deciduous forest, the vegetation is frequently stratified into four distinct layers: the forest canopy, the understory, the shrub layer, and the herbaceous layer.

The winter months, when the leaves are off the trees, offer good opportunities for observing forest stratification. With the exception of the herbaceous layer, which at this time of year displays only mosses and some evergreen ferns, the other forest layers are readily seen.

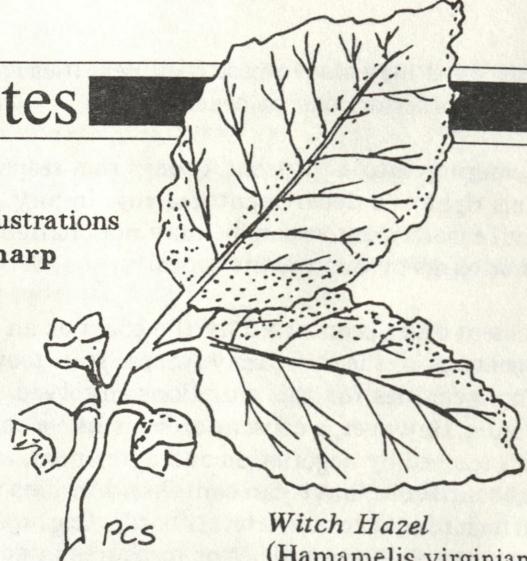
The understory layer, made up of trees whose maximum height is usually less than 40 feet, is perhaps the most overlooked layer of the forest. Its trees do not have the grandeur of the canopy trees nor the dense and thick aspect typical of shrubs. Nonetheless, some of the forest's most interesting tree species are found in the understory layer.

Understory trees are shade tolerant and can carry on maximum photosynthesis at less than full sunlight. They are an important component of the forest as their presence increases its total diversity, enhancing healthy, disease-resistant development.

A well-layered forest is also important to wildlife: many birds and small mammals demonstrate a preference for certain layers of the forest. Forests that have a diversity of structure will generally attract a large variety of animals.

In Connecticut forests, the understory stratum is composed of saplings of the major tree species which are on their way to reaching canopy size and of several tree species that, at maturity, remain in this layer. Some of these permanent residents of the forest understory include witch hazel, flowering dogwood, hop hornbeam, and ironwood.

Witch hazel (*Hamamelis virginiana*) is an interesting small tree that can be found throughout our rich, moist woods. The oval leaves of witch hazel are alternate along the branch and range from two to five inches long. The leaf typically has a wavy margin and a slightly lopsided base.



Witch Hazel
(*Hamamelis virginiana*)

WITCH HAZEL FLOWERS appear in late fall or early winter and have narrow yellow petals. From the flower, a two-beaked fruit capsule develops. When mature, the capsule splits open and forcibly expels the shiny black seeds. The expulsion disperses the seed some distance from the parent plant. The fact that witch hazel is in bloom when all other deciduous trees are dormant apparently led pre-settlement peoples to ascribe healing powers to this tree.

The inner bark and roots were utilized medicinally. A witch hazel lotion distilled from leaves and bark is still in use today. Witch hazel has also been used to locate underground springs. Its branches are selected by "water diviners" who use forked twigs to find water.

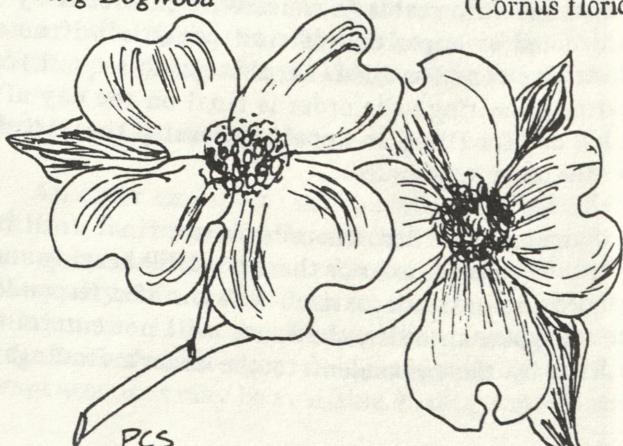
Witch hazel twigs, buds, and seeds are consumed by many wildlife species including white-tailed deer, cottontail rabbit, pheasant, and ruffed grouse.

Another common understory tree is flowering dogwood (*Cornus florida*). Flowering dogwood is one of the few tree species that has opposite branching leaves; therefore it is relatively easy to distinguish this tree from others of its size and stature.

The leaves, which become an attractive purplish red in the fall, are ovoid and have distinctive secondary veins which parallel the smooth leaf margins. This pattern of venation is termed "acuate" and is diagnostic of all dogwoods. The four-parted flowers are quite small and in-

Flowering Dogwood

(*Cornus florida*)



conspicuous and the showy petal-like parts are actually bracts, or modified leaves. From mid-August to November, the red fruits, technically "drupes," are borne in terminal clusters. Many species of birds and mammals feed on the dogwood fruits, thus the tree has important wildlife value.

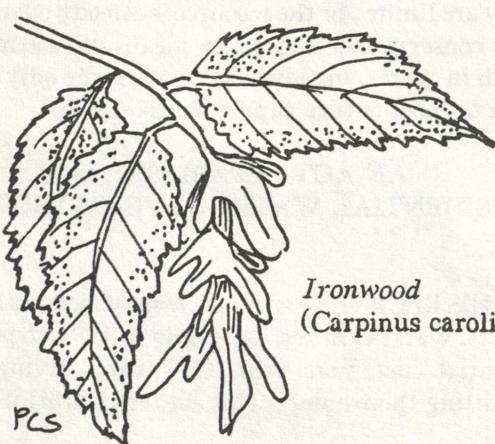
During the period when leaves are off the tree, flowering dogwood can be recognized by its twigs with their opposite buds and by the medium gray, finely checkered bark which is said to resemble alligator skin.

FLOWERING DOGWOOD has a variety of uses, both former and current. The wood is hard and dense; thus it is an excellent firewood, as it burns hot. The hard wood has been used in the manufacture of bobbins, tool handles and golf club heads. The bitter inner bark was once used as a substitute for quinine. Apparently the bark and twigs are quite effective as teeth whiteners and can be ground into a tooth powder. Those interested in natural dyes might wish to try the bark of dogwood roots which produces a red dye.

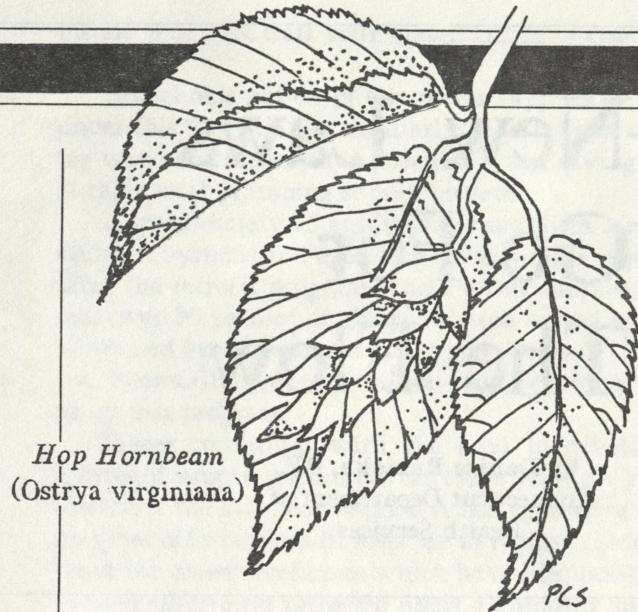
Dogwood grows well in the forest shade, needing only one-third full sunlight to perform maximum photosynthesis. Dogwood litter enriches the forest soil. Its leaves are high in calcium and decompose rapidly, releasing important minerals.

Another distinctive tree in the forest understory is ironwood (*Carpinus caroliniana*). This small tree has several other common names including American hornbeam, blue beech, and musclewood. The latter is an apt name as the tree is readily distinguished by its smooth, rippled and sinewy characteristic.

The sharp-tipped oblong leaves of ironwood are doubly toothed. The leaf veins are straight and terminate in the larger teeth. The flowers are borne in catkins, and the male and female occur separately on the same tree. The flowers are distinctive, though small, and are something to look for in the spring. They are three-lobed, with the middle lobe more than twice the length of the other two.



Ironwood
(*Carpinus caroliniana*)



Hop Hornbeam
(*Ostrya virginiana*)

PCS

The fruit of this tree is a small nut which occurs at the base of a three-pointed leafy bract. Clusters of the bracts bearing ripe fruit hang from the tree from August until November.

THE WOOD OF IRONWOOD is dense and heavy. It decays rapidly when left on the ground. It was once considered a good source of charcoal in the manufacture of gunpowder, and the wood has also been used for making tool handles. The fruits and buds of ironwood are enjoyed by a variety of wildlife species including grouse, pheasant, wild turkey, and grey squirrel.

A tree of the same family (*Betulaceae*, the birch family) as ironwood is hop hornbeam (*Ostrya virginiana*). There is frequently confusion over the common names of the two species as hop hornbeam is also known as ironwood. While similar in many respects to American hornbeam, hop hornbeam can be distinguished by its bark which is grayish-brown and shreds in long narrow strips.

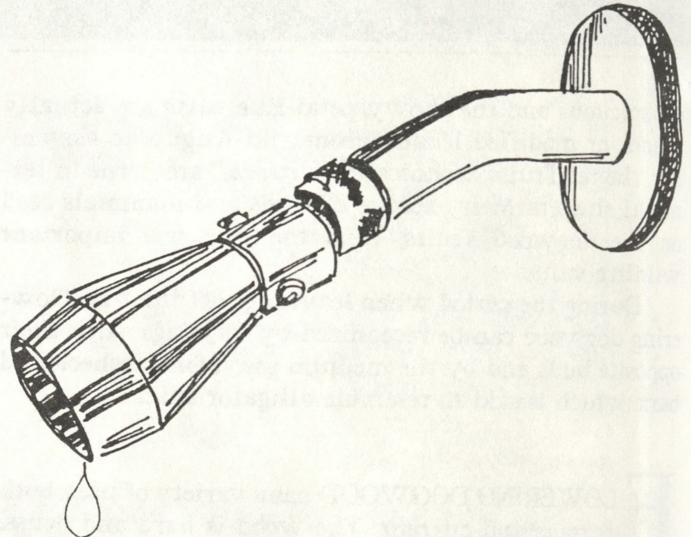
The leaves closely resemble those of its relative and are oblong, pointed, and doubly toothed. In texture, they are somewhat more hairy than those of American hornbeam (or musclewood). The flowers occur in catkins with separate male and female on each tree. The male catkins frequently persist throughout winter. The fruit, or nut, is borne in a bladder-like sac. The clusters of sacs are thought to resemble hops, hence the common name, "hop" hornbeam.

The wood of hop hornbeam is extremely tough and hard. It makes excellent firewood but is difficult to split. The wood has been used for making bows, handles, and sled runners. A European species was used for yoking oxen. The fruits, buds and twigs are a winter staple for grouse, pheasant, cottontail and deer.

Understory trees are an important part of our forests and are a good resource for area wildlife species. These interesting trees merit our attention at any season of the year.

New Laws Go For The Flow

by Denise Ruzicka, P.E.
Connecticut Department of
Health Services



WATER CONSERVATION is no longer just for drought stricken Californians but is a reality in Connecticut as well. Water conservation is now the law in Connecticut. Three conservation related pieces of legislation were enacted by the 1989 legislature requiring a statewide residential retrofit program, more efficient (lower flow) plumbing fixtures, and uniform water conservation planning.

There was no drought or large scale water supply shortage which prompted this legislation. Rather, it was the result of a governor (former Governor William A. O'Neill), state agencies, environmental groups, and various legislators who viewed water conservation as a long-term tool to reduce demands and therefore reduce or delay the need to develop additional sources of water supplies.

Water conservation is a win-win situation. Resources are protected by conservation. Utility supplies are extended. The consumer wins. The environment wins. The utility wins.

Reducing the amount of water each of us uses can reduce the amount of water withdrawn from rivers and ground water supplies. Furthermore, water use reductions directly translate into reductions in wastewater discharged to our rivers from municipal sewer plants. (There are also energy savings related to the cost of heating water.) Households on private wells also benefit by reducing loads on septic systems.

In Connecticut each person uses an average of 75 gallons per day. This means that a typical household of four will use 300 gallons per day or over 100,000 gallons of water per year. It is estimated that in the average household only one-eighth of the water used is consumed or used in cooking, while more than one quarter is for toilet flushing. This is not surprising when one realizes that conventional toilets use 3.5 to 5.0 gallons per flush.

In some areas, each gallon of water which comes out of your tap has its origin in rivers feeding reservoirs. In addition, many of the larger public drinking water wells are located in high yielding aquifers alongside major

rivers. These aquifers are often hydraulically connected to the adjacent streams, meaning that pumping of these wells can reduce stream flow. Thus, there is a direct relationship between each individual's personal water use and our water resources.

THE NEED FOR WATER CONSERVATION

Connecticut is a relatively water-rich state. Connecticut has median annual rainfall ranging from 41.65 inches along our Long Island Sound shoreline to 53.17 inches in the Berkshire Hills. Why then the need for water conservation? Water conservation programs are being implemented as an anticipatory measure rather than a reactive measure. Water conservation is beneficial under all supply circumstances.

Connecticut does have areas where supply shortages exist. Due to various water resource concerns, the Connecticut Department of Environmental Protection has designated 87 of 340 sub-regional basins within Connecticut as "Basins of Concern." These are watersheds that have rivers and streams with degraded water quality, inadequate stream flow to meet aquatic habitat needs during low flow periods, streams currently overallocated, or streams already allocated for waste assimilation.

In these areas, where new sources of high quality supply are limited or the resource is already overallocated, water conservation and other means of controlling the growth in water withdrawals may be the only available option to meet future supply needs.

AN ACT ESTABLISHING A RESIDENTIAL WATER SAVINGS PROGRAM

THIS RECENT STATE LAW now requires most public water utilities, beginning in 1991, to provide all residential customers with free water saving kits for retrofitting their homes. This act requires all water com-

panies serving 1,000 or more people or 250 or more service connections to provide, at no cost to the consumer, residential water savings retrofit kits. Up to two kits per dwelling unit must be provided free of charge upon request.

Retrofitting either replaces or modifies existing toilets, showers and faucets to reduce water use. A retrofitted plumbing fixture will use less water than the original fixture. Once in place, the retrofit devices require no conscious effort on the part of the user to save water. You do not have to change your lifestyle or habits.

Retrofitting is accomplished by providing householders with a kit generally consisting of: a low-flow showerhead; two faucet aerators, one for the kitchen and one for the bathroom; a pair of toilet tank flush dams; toilet leak detection tablets; installation instructions; and other water conservation literature. The showerheads and faucet aerators will be high quality chrome-plated brass and will meet new statewide efficiency standards.

A toilet dam is a flexible panel which, when placed across the bottom of the toilet tank, holds the water behind it, thereby reducing the water used in each flush. The dam is sized so that when properly installed it will not interfere with any moving part in the toilet. Standard toilets use between 3.5 to 5.0 gallons per flush. Each dam can save an average of 1.0 gallon per flush. In the older "water guzzler" toilets, using 5.0 to 7.0 gallons per flush, two dams can be used, doubling the water savings.

Leaky toilets are a major source of wasted water in a home. Over 20 percent of all toilets leak. Leak detection tablets are a simple way of testing for leaks. Most toilet leaks are due to improper seating of the flapper valve. Often minor adjustments or replacement of the flapper valve are all the repair that is required.

During 1991, each residential water customer will be contacted and instructed how to obtain a retrofit kit. Retrofit kits will not save water unless they're installed. So be sure to take the less than 20 minutes needed to

install your kits. Call your water utility to obtain a kit today!

Households not on public water supplies or covered under this program can similarly benefit from conserving water and are urged to purchase water saving devices at their local plumbing supply outlets.

Approximately 75 public water suppliers, some with multiple systems and operating divisions, are required to offer the retrofit program. These water suppliers represent over 90 percent of the population served by public water and over 75 percent of the population of Connecticut. Potentially over two million people could be impacted by this program.

Water companies with the need to develop new sources of supply within the next five years are required to deliver the kits door-to-door. A less aggressive retrofit program offering kits in response to request cards is proposed for water companies which have adequate supplies to meet short-term projected needs. Depending on utility supply status and size, some installation services may also be offered to customers.

AN ACT CONCERNING MINIMUM EFFICIENCY STANDARDS FOR PLUMBING FIXTURES

THIS ACT REQUIRED that the Connecticut Department of Consumer Protection, in consultation with other state agencies, set minimum efficiency standards for plumbing fixtures. This bill was modeled after the proposed national bill.

Maximum fixture flow rates are established at:

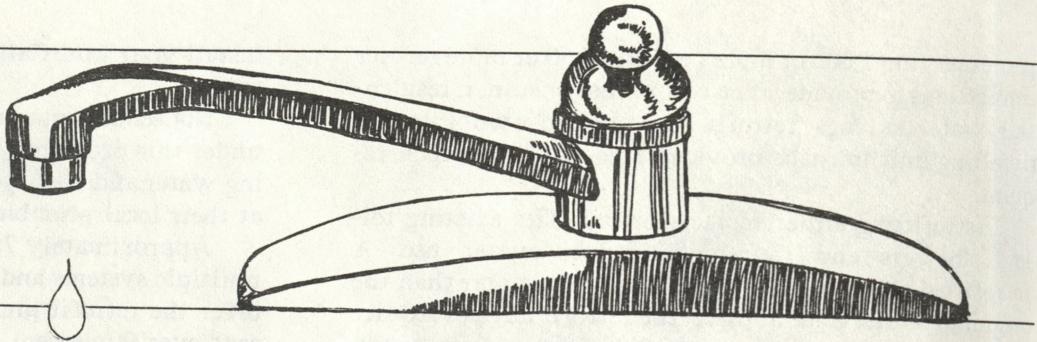
- 1.6 gallons per flush -- toilets
- 2.5 gallons per minute -- showerheads
- 1.0 gallons per flush -- urinals
- 2.5 gallons per minute -- bathroom sinks, lavatory and kitchen faucets and replacement aerators.

These efficiency standards apply to all plumbing fixtures sold, offered for sale, or installed in Connecticut. The effective date is January 1, 1992, for toilets, and October 1, 1990, for all other plumbing fixtures.

This act supersedes and lowers Connecticut's existing low flow rates, as found in the plumbing code, of 3.0 gallons per minute for aerators and 3.5 gallons per flush for toilets. Connecticut is the first state to implement the 2.5 gallon per minute showerhead standard. It is anticipated that in the long term the bill will reduce indoor water use in new homes by about 25 percent and will produce additional savings in renovations and replacement of existing fixtures and appliances.

Data indicate that low flow devices are readily available, and tests indicate that low flow products meet or exceed current standards. In the June 1990 issue of *Consumer Reports*, seven brands of low-flow toilets (1.5 gallons or less) were found to have performance comparable to 3.5 or even 5 gallon models. One of these toilets has a list price of only \$50. Over 14 manufacturers currently





produce low flow toilets and more are expected to have the capability in the future.

AN ACT ESTABLISHING A WATER RESOURCES POLICY

THIS ACT ESTABLISHED various state water resource goals and policies including:

- to make water resource conservation a priority in all decisions;
- to conserve water resources through technology, methods and procedures designed to promote efficient use of water and to eliminate the waste of water;
- to reduce or eliminate the waste of water through water supply management practices.

This act also required the various state agencies regulating water purveyors and water resources (the departments of Environmental Protection, Health Services, and Public Utility Control) to prepare joint water conservation and emergency contingency plan guidance documents and investigate means of implementing a unified

requirement.

This act alleviates problems of overlap and redundancy in state agency requirements and authority. It modified existing statutory or regulatory authorities of each agency by requiring plan conformance with a set of jointly prepared guidelines. Water conservation and emergency contingency plans required by each agency now must be consistent with these joint guidelines.

The objective is for water supply companies to prepare one plan appropriate for submittal to each agency, instead of three similar yet distinct plans. The intention is to focus attention on plan implementation instead of plan preparation.

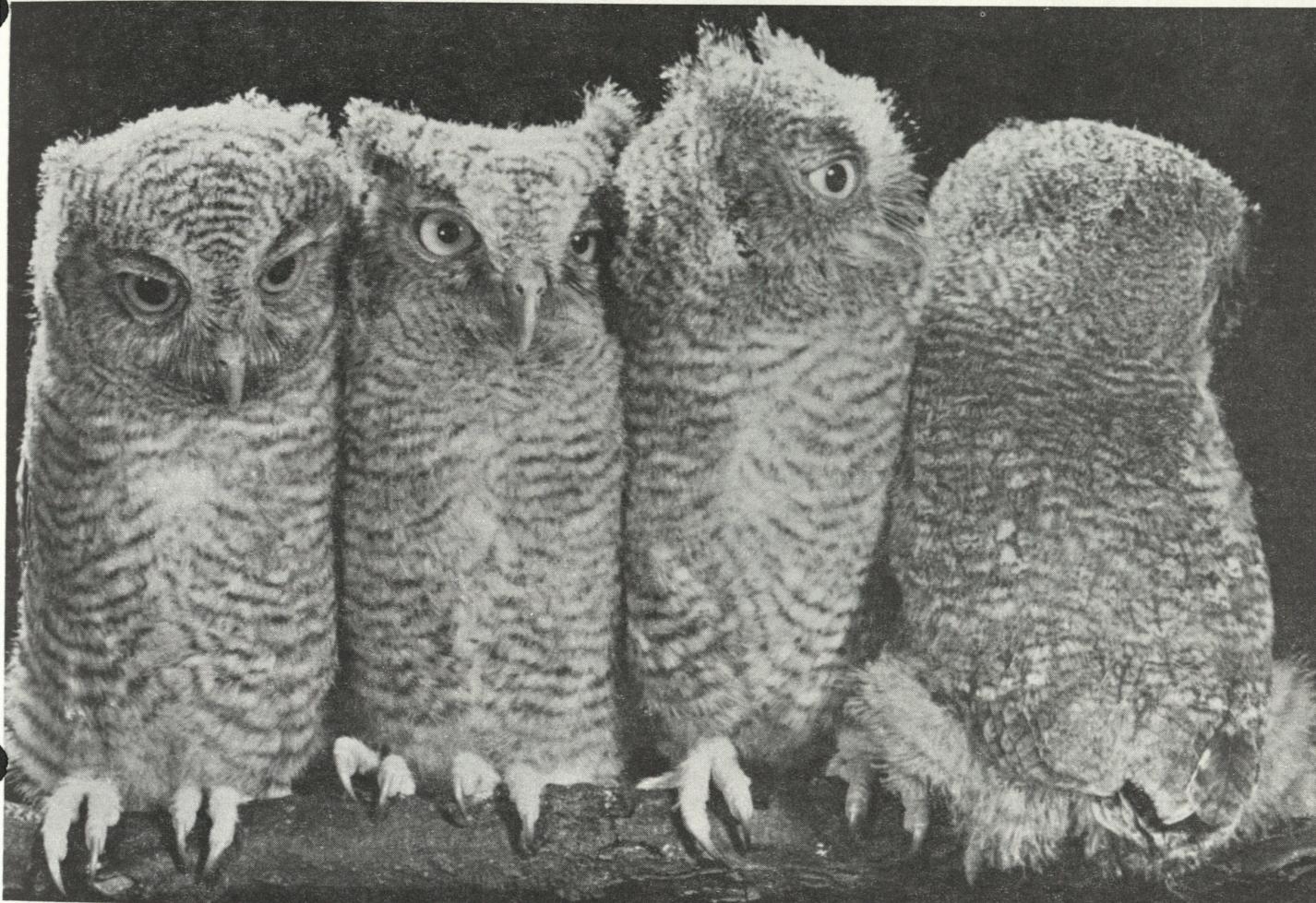
Separate guidances have been developed for public water suppliers; industrial, commercial, and institutional water users; and agricultural water users. An interagency memorandum of understanding on coordination and implementation of the joint guidelines has been signed recently.

For more information, contact: Denise Ruzicka, Connecticut Department of Health Services, Water Supplies Section, 150 Washington Street, Hartford, Connecticut 06106 TEL: (203) 566-1253

EASY WAYS TO CONSERVE WATER AT HOME



- Install water saving devices to retrofit existing fixtures
- Purchase water-efficient appliances, including a low-flush toilet
- Repair leaky fixtures on a regular basis
- Do not leave the water running while brushing teeth and shaving
- Wash only full loads of dishes and laundry
- Do not use toilet as a wastebasket
- Keep a bottle of cold water in refrigerator instead of letting tap run
- Sweep driveways and walks instead of hosing them
- Water lawns and gardens at night to minimize evaporation



Immature screech owls during the brancher period. (Photo: Robert Strindberg)

People Among Perils to Young Raptors

by Carol Davidge
Public Information Coordinator
Connecticut State Museum
of Natural History

RAPTORS ARE FLESH-EATING BIRDS of prey: hawks, owls and eagles. Despite their majestic appearance and ferocity, they need human help. All have federal protection, which means that it is against the law for people to possess a raptor (alive or dead), or the bones, feathers, eggs, nests or any parts thereof.

From late March until mid-summer, people in Connecticut should be alert to avoiding immature raptors. According to Jan Mitchell, a raptor rehabilitator from Portland, Connecticut, problems result for raptors when humans discover a young raptor on the ground and pick it up. Although it may be difficult, you should walk away without touching the bird, unless it is injured or unless you see evidence of a predator. In fact, according to Mitchell and George Clark, the State Ornithologist at UConn, almost all young birds found on the ground should be left alone. If you see a cat, take the cat away, not the bird, advises Clark.

The raptors which produce young earliest in Connecticut are the nonmigratory great horned owls. They mate in January, hatch in February, and the young begin to move out of the nest at the end of March and in early

April. Later in the spring and early summer, the young of migratory raptors, such as broad-winged hawks, are hatched.

"This is the time of greatest peril for young raptors, when the public, believing the young birds to be orphaned, try to help by picking them up and calling raptor rehabilitators," said Mitchell. She and her husband Stuart have been caring for injured birds for 22 years at "The Mews," the rehabilitation center located at their home in Portland. Mitchell says that it is especially important to teach children who go exploring in the woods not to touch a "brancher" or young raptor, because many calls come from parents whose youngsters have brought young birds home.

WHEN THESE LITTLE GUYS are first out of the nest, walking along the branches learning about their environment, they are curious. They're working their bodies, holding onto the branch. But their flight feathers are not fully extended from the shaft and often they cannot sustain enough weight to fly, so they may fall to the ground," said Mitchell.

"Also, a young brancher is apt to get diverted. It might follow a bug or a toad or a clutchmate off the branch, leaving the nest area, while it watches something that might eventually be a prey item," she said.

"A pair of great horned owls may have one or two young, which can travel great distances by hopping. When one parent stays in attendance at the nest while the other parent is off trying to find 12 to 15 mice a day for each young bird, if two offspring go in different directions, the parents are going to have problems," said Mitchell.

"Occasionally young birds do fall off the branches, but that is the way life is for raptors," she explained, adding that one of the parents is usually nearby, often watching the brancher from overhead. Within 24 hours the parents will have worked the baby raptors back up into the trees by getting them to walk, jump or hop out of the reach of most predators.

Unless you see that both parents are dead, don't assume that a bird is an orphan. The parents are probably watching you. Mitchell urges you to leave the "brancher." If you want reassurance, return 12 or 24 hours later to be sure that the bird has moved.

Problems begin if people touch the brancher when it is on the ground. First, the scent of humans gets on the birds. Then predators, such as raccoons, find it easy to track and kill them, even if the branchers are up in a tree. Second, it can be dangerous to you to pick up an immature raptor. "A young great horned owl or red-tailed hawk that is nearing full growth has tremendous power in its talons, or claws, and can inflict injury," said Mitchell.

People may also be attacked by some raptor species defending their territories, especially during nesting sea-

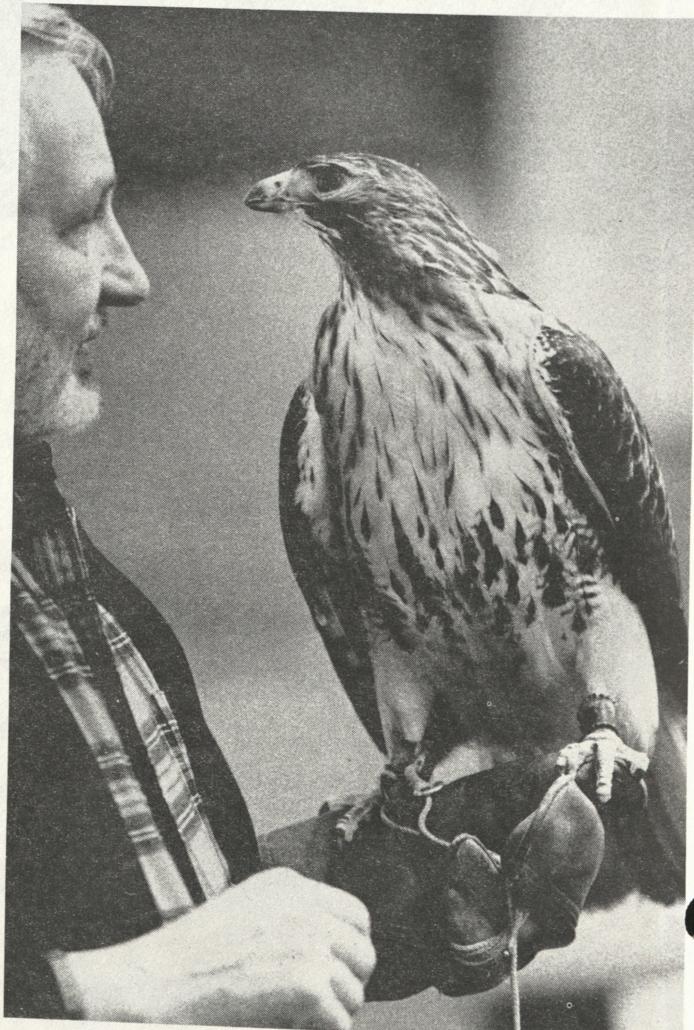
son. The adult may fly, screaming, directly at the intruder. If the human does not turn around and head in the other direction, the raptor is apt to strike. Therefore, if you are in the woods and hear a scream and see a bird flying toward you, turn around and cover your face and eyes and walk quickly in the opposite direction. Note that not all raptorial species employ this tactic.

Further, a young raptor that goes home to a human family, even for a short while, often becomes imprinted on humans rather than on its natural parents, causing such severe behavioral problems that the bird may be unable to survive in the wild.

"The best thing that you can do if you find a brancher is to take yourself and any children or animals away and put the cat and dog in the house," said Mitchell.

Only when a bird is injured should a person intervene. When you see a bird in trouble, call the DEP Communications Office (203-566-3333), where someone will answer the phone 24 hours a day and provide the tele-

Raptor rehabilitator Stuart Mitchell of Portland, CT with adult red-tailed hawk. (Photo: Charles Hisey, The Chronicle)



phone number of a rehabilitator or veterinarian who deals with wildlife.

Use extreme caution near young or adult raptors, because even trained naturalists find themselves at risk. For example, when Robert Dubos, manager of UConn's vertebrate collections, tried to rescue a great horned owl off a barbed wire fence, the bird put a talon through professional linemen's gloves that covered Dubos' arms up to his elbows.

Mitchell says that one way to check whether a bird needs human help is to think of birds as you would a person: any behavior that would suggest injury to a human may indicate injury in birds — if you saw a person struggling to walk or hanging onto a light pole, for example, you might guess that the person was in trouble.

"I watch to see if a bird is doing anything that might not be normal behavior. For example, I wouldn't expect to find a red-tailed hawk perched on a back porch watching steak grilling on a barbecue, which has happened. Encounters in close proximity to humans are good indicators of birds with problems," said Mitchell.

ACCORDING TO CLARK, one breeding raptor in Connecticut which is at risk is the American kestrel, because the number of known nesting sites seem to be declining, although we don't know why. Barn owls need special care, since all known nest sites in Connecticut are human structures, such as barns, which are becoming less numerous. Because saw-whet owls rarely nest in Connecticut, if you find a baby saw-whet owl, please be especially cautious. Cooper's and sharp-shinned hawks and gyrfalcons uncommonly nest in Connecticut and so it would be unfortunate if humans create problems for them. If you see these species nesting in Connecticut, you should report it to the D.E.P. or The Connecticut State Museum of Natural History at UConn. As recently as 1980, the Cooper's hawk in Connecticut had the highest pesticide levels known in any state sampled east of the Mississippi River. The red-shouldered hawk, which was doing poorly due to pesticides, seems to be recovering, and most other hawks are doing better than in the period of indiscriminate use of pesticides.

Bald and golden eagles do not nest here, but as the number of bald eagles increases, some may soon make homes here. Ospreys, once reduced to a single breeding pair in Connecticut, have recovered to about half their earlier numbers, or about 106 breeding pairs.

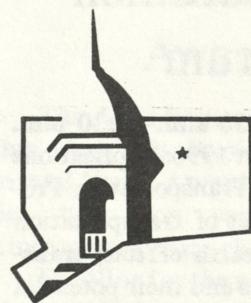
All these raptors are among the most fascinating birds in Connecticut. To learn more about them, come to "Raptors: Live Birds of Prey," a family day with hands-on crafts for children and demonstrations of live hawks, owls and eagles, hosted by the Connecticut State Museum of Natural History on Sunday, April 7 from 1 to 5 p.m. in Jorgensen Auditorium at UConn in Storrs; ad-



Immature broad-winged hawk. (Photo: Suanne Jackson)

mission is \$4 for adults; free for all children and Museum members. For information, call 486-4460.

This article was contributed by The Connecticut State Museum of Natural History at The University of Connecticut in Storrs, which exhibits mounted birds of Connecticut, the largest mounted white shark on display in the eastern United States, "Videoplace" interactive video, and Indian artifacts, and offers programs for teachers, children, and adults. For information, contact the Museum, UConn, Box U-23, Storrs, CT 06269-3023; phone (203) 486-4460.



The Bulletin Board

Rivers Photo Contest

Entries must be postmarked no later than April 15, 1991.

Contest is open to anyone. No entry fee. Grand prize of \$300 as well as first (\$150), second (\$100), and third place (\$50) prizes in each of the two categories: 1. River use (business, industry, recreation, agriculture, etc.) and 2. Scenic/artistic (scenery, wildlife habitat, river features such as waterfalls and rapids).

All photos must be of rivers and streams in Connecticut. Only unmounted color or black and white prints (5 by 7 inch minimum size), previously unpublished, will be accepted; slides or transparencies are not eligible.

Entries must include, on the back of the photograph, name of photographer, home address, work and home phone numbers, location and date of picture, and the category for submission.

Only one prize will be awarded per contestant. Contestants grant the D.E.P. the right to publish and exhibit entries. Mail entries to:

Rivers Photo Contest
Connecticut D.E.P.
Room 119
165 Capitol Avenue
Hartford, CT 06106

Transportation Forum

April 2nd, 8:30 a.m.-12:30 p.m.
"The Clean Air Act 1990: Implications for Connecticut's Transportation Programs." The impact of transportation on air quality; health effects; transportation strategies and their potential effects; effects of the new Clean Air Act. The University of Hartford, Wilde Auditorium. Sponsored by the D.E.P. and the American Lung Assoc-

ation of Connecticut. Open to the public, free of charge. Registration required: phone Jennifer Carnes Kertanis at A.L.A., 289-5401. ■

Recycling Calendar

To get a free 1991 poster/calendar, which features the winners of a statewide recycling poster contest for fourth, fifth, and sixth grade students, write:

Kim Trella
D.E.P. Recycling Program
165 Capitol Avenue
Hartford, CT 06106

Environment/2000 Conference

April 19th, 1991. "Conservation of Connecticut's Land Resources" will be the theme of the fifth annual Environment/2000 statewide conference.

The conference at the Ramada Inn in Meriden will run from 9:00 a.m. to 3:30 p.m. Exhibit space at the conference is available for interested groups.

Sponsored by the Department of Environmental Protection, the conference is open to the general public. For additional information or registration materials, contact Tessa Gutowski or Tina Delaney at 566-5125; Room 119, State Office Building, 165 Capitol Avenue, Hartford, CT 06106. ■

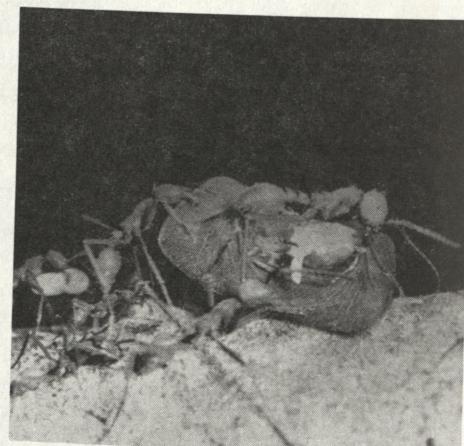
Wildlife Week April 21-27

This year the National Wildlife Federation celebrates "Fragile Frontiers: The Ends of the Earth," focusing on the Arctic and the Antarctic and the environmental problems that have begun to threaten these "ends of the earth." ■

Dinosaur Park

March 26th, 7:30 p.m.
"Connecticut's New Endangered Species Law: What It Means to Some Disappearing Animals." Dawn McKay, Zoologist, D.E.P. Lecture series admission: \$2.50; free for Friends of Dinosaur Park.

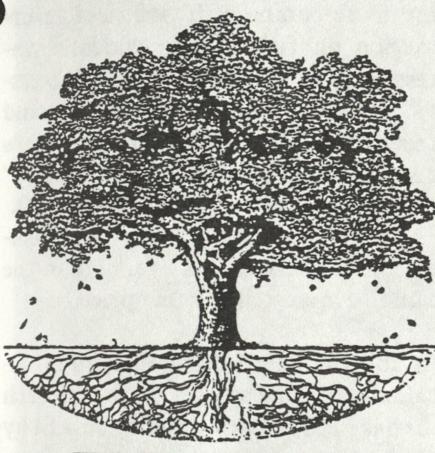
April 13th, 10 a.m. - 4 p.m.
Sixth annual "Dinomania!" Dinosaur Fair and Collectibles Show. Dinosaur memorabilia collections including toys, games, books, postcards, posters, and artwork. Door prizes. Videos. Activities. Refreshments. Fun for all ages. Exhibitors are welcome: call 529-8423 to show, swap, or sell at Dinomania. Admission is free with exhibit center admission of \$2 for adults; \$1, 6 to 17. Under 6, free.



Army ants (Carl Rettenmeyer, CT Mus. of Nat. Hist.)

April 16th, 7:30 p.m. "Army Ants and Their Guests." Dr. Carl W. Rettenmeyer, Professor of Ecology and Environmental Biology, University of Connecticut. Lecture series admission: \$2.50; free for Friends of Dinosaur Park.

Dinosaur Park is on West Street in Rocky Hill (Exit 23 off I-91). Information: 529-8423.



CELEBRATE ARBOR DAY!

ARBOR DAY: April 26th; **ARBOR MONTH:** April 15th - May 15th. Fifth grade teachers were invited to request tree seedlings (by March 15th) and to hold Arbor Celebration and Tree Planting Ceremonies. The Pachaug State Forest Tree Nursery will supply 25 white spruce seedlings and the Goodwin Conservation Center and D.E.P.'s Educational Services Unit are providing companion educational materials.

Ornithological Meeting

March 16th, the Connecticut Ornithological Association holds its full-day Seventh Annual Meeting Saturday, at Quinnipiac College in Hamden. For information: Tish Noyes, 203-468-6273, or George Zepko, 203-347-1133.

Horticultural Society

March 21st, 8 p.m. "Mixing It Up: Mixed Borders of Shrubs, Perennials & Annuals," program with garden designer, lecturer, and writer Elsa Bakalar. Robert Keeney Memorial

Center, 200 Main Street, Wethersfield; Information, Ingrid Boelhouwer, 529-8713.

Regular meetings of the 153 year old society are open to the public and are held on the third Thursday of the month at 8 p.m. at the Keeney Memorial Center, 200 Main Street, Wethersfield. Suggested donation, \$2.

Concert for Chernobyl

April 26th, 7:30 p.m. "Children of Chernobyl" Benefit Concert, Lincoln Theater, University of Hartford. Featuring the Dibrova Ukrainian Choir with special guest Peter Ostrouzhko, known for his "Prairie Home Companion" music. All proceeds to "Children of Chernobyl Relief Fund." Information: 525-1534.

Orienteering

The following events are sponsored by the New England Orienteering Club or the Western Connecticut Orienteering Club. Instruction in orienteering and rental compasses are available at each meet. Call meet director for more information.

March 17th, 10 a.m. - 1 p.m. Rocky Neck State Park, East Lyme. Information, Paul Pearson, 745-7457

March 23rd, 11 a.m. - 1 p.m. Brooksvale Town Park, Hamden. Information, Don Tall, 272-7354.

April 14th, 10 a.m. - 1 p.m. Wadsworth Falls State Park, Middletown. Information, Paul Pearson, 745-7457.

April 14th, 11 a.m. registration. Macedonia Brook State Park, Kent. Information, Peter Goodwin, 927-4021.

April 28th, 11 a.m. - 1 p.m. Five Ponds, White Memorial Foundation, Litchfield. Information, Dick and Marilyn Fetzer, 673-1092.

May 18th, 10 a.m. - 1 p.m. Hurd State Park, East Hampton. Information, Paul Pearson, 745-7457.

May 18th, 11 a.m. - 1 p.m. Huntington State Park, Redding. Information, Karen Olah, 367-9791.

Organ Donor Calendar

A four-color 1991 calendar sponsored by the Department of Motor Vehicles, the Organ and Tissue Donor Coalition, and United States Surgical Corporation is available through D.M.V. branch offices and auto emissions testing centers. The calendar features 13 original posters by Connecticut high school students and promotes organ donation via the D.M.V. driver license program.

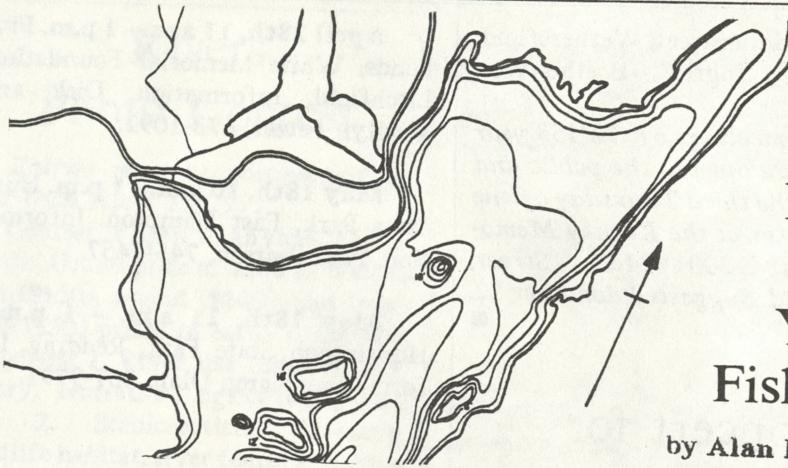
The second annual Organ and Tissue Donor Poster Art Contest for 9th through 12th grade students is now in progress, and winners will be announced during National Organ and Tissue Donor Awareness Week (April 21st to 27th).

President's Youth Awards

The U.S. Environmental Protection Agency's President's Environmental Youth Awards program is under way for young people in kindergarten through 12th grade.

Deadline for the national competition will be July 31, 1991. For further information, contact: Evelyn Sullivan, EPA, JFK Building, Boston, MA 02203; (617) 565-3187.

Map of the Month



Map Out Your Fishing

by Alan Levere

That feeling is coming on again. Springtime: early morning, hot coffee, quiet, mist lingering in the air above the water; the opening day of fishing season. The picture begins to dominate the imaginations of every fisherman in the state.

A little preparation for opening day helps shorten winter a few weeks, in our minds at least. As we did last year, we have some things that can help move this particular thaw along.

Waterproof Chart of the Connecticut River: For a long time we have received inquiries from fishermen about river depth information. We now have it for the Connecticut River.

This new, two-sided, single sheet National Oceanic and Atmospheric Administration navigational chart incorporates five separate panels to give coverage of the river from Long Island Sound up to Hartford. It is plastic coated, waterproof and tear resistant.

Three major colors dominate the map. The river, coves, ponds, and some tributaries are in blue. The landscape bordering the river and the major islands are brown. The maintained channel of the river is white. The depth measurements for the river were measured at low tide and are given in feet.

Known sand bars, shoal areas and major islands are named and marked. The locations of many lighthouses, rocks, pilings and jetties are given. Also, the landscape along the river is represented topographically, revealing

the gradient of the shoreline. About the only thing the map does not show is where the fish are.

If you will be out on the Connecticut River this map should prove to be an asset. The sheet size is 25 by 38 inches, printed on both sides. The scale is 1:25,200 (1 inch equals 0.4 mile); \$14.95.

"Guide to Lakes and Ponds": features information on 73 lakes and ponds, including such specifics as water surface area, access directions, parking lot capacity, and a briefing on regulations: such as whether or not power boating is allowed (nice information if you are canoeing). Also notes on overabundance of weeds, shallow or unimproved launch conditions, and — most important — which types of fish inhabit the waters.

The full page maps (8 1/2 by 11 inches) reveal the depths and bottom contour of each water body. Now you can share the secrets of those deep spots and shallow areas. Spiral bound for easy use; \$4.65.

The book "**Freshwater Fishes of Connecticut**" offers line drawings, generalized life histories, distribution maps and sampling sites, identification aids (color, fin alignment, length and preferred spawning areas), and favored foods for 82 species of reported for the fresh waters of Connecticut.

"**Freshwater Fishes**" will help you understand which species frequent which waters, and which fish

are more common. If you need information on fish of Connecticut's waters, where species have been successfully taken, what they look like, and frequency of distribution, the maps and the "Discussion of Distribution" sections will help. 134 pages, \$4.00. (A sister publication, "Saltwater Fishes of Connecticut," is available in the same format at the same price.)

In addition, two different sets of detailed lake maps are available. Each map is printed individually on a 14 by 18 inch sheet. The water body is depicted in varying shades of blue, with the deep water areas being darker and the shallow depths lighter.

Stream inflows and outflows are mapped to show areas of mixing where fish might be feeding. A cross section reveals the bottom profile. The boat launches and picnic areas are depicted, and the local roads are named and identified for ease in getting there.

There are discussions of water quality, which includes dissolved oxygen content, alkalinity and acidity, and their effects on fish. Graphs of temperature and dissolved oxygen provide summer and winter profiles of these conditions. The summer profile is helpful to show the depth at which there is a depletion of oxygen below which fish cannot survive. Areas heavy with aquatic vegetation and the lake bottom are also described.

The two lake map sets are the "**East Group**," which includes: Bashan and Cedar Lakes, Mashapaug and Pachaug Ponds and Mansfield Hollow; and the "**West Group**," Beseck, Squantz, and Mudge Ponds, and Waramaug and Winchester Lakes. Each set is \$5.00.

Opening day of fishing season; early morning and being out of doors. Some people even like to catch fish! Good luck to all of you who give it a go.

To order, please include \$2.00 per order (not per item) for handling and eight percent sales tax. Our address is: DEP-NRC, Map Sales, Room 555, 165 Capitol Avenue, Hartford, CT 06106. ■



"Les" is More

by Roland Charest

State DEP people are going to miss Les Whitham.

That's fine. People are Les Whitham's main concern.

"I love people. Always have. Every level, every type," says Les, who retired this month after serving the State of Connecticut for almost 34 years.

"And let me tell you this: A lot of good people work for the state. Sure, there's an occasional bad apple. But, overall, a super bunch of people. I know. I've had the pleasure of working with them."

Notice the word "with"?

That's Les. He works with you, not above you. In his view, every state worker is equal and he works with each on his/her level. He has for 34 years.

Les, 61, was born in Bridgeport and attended Newington High School

and the University of Maine (Bachelor's degree in forestry).

Between high school and college, Les, who retired as Chief of the Bureau of Operations Management and Services, served four years in the Air Force.

He was stationed in Alaska.

"That was super. The hunting and fishing were great. Hunting — for deer with a rifle — is my favorite way of relaxing," he says.

"My other favorite way is spending time with my three grandchildren."

Les, who lives in Farmington, is married to Charlotte, a popular school teacher in New Britain. They have two daughters, Charless and Susan, and a son, Leslie (not junior).

Yes, you read correctly, Charless. Les explains: "We had to use two 's's'. The name is a combination of Char-

lotte and Les. With only one 's', she would have been Charles. No go. So she is a unique, Charless."

In his first state job (skilled laborer), Les was paid \$1.51 per hour.

Looking back, any special best moment?

"Not really. I enjoyed every day. Rising up through the ranks was exciting. Every new challenge, working with new people, I enjoyed it all," says Les.

How about a worst moment?

He pauses a few minutes. "Not many. Maybe the worst was one guy I hired. He turned out awful. But in time, that was straightened out."

Unlike many retirees, Whitham is greeting the new life stage with open arms. And a full schedule, you might say.

"How will I keep busy? For years I have been an avid collector of tortoises. I had one female, Bertha, 33 years. She has passed on. Her mate, Benny, is still with me. We've had him for 30 years."

"Also, I'm a finished cabinetmaker. And my wife and I do metal detecting. And we collect antique beer steins."

Les laughs.

"Hey, I'm going to need three lifestyles!"

As he looks back over his Connecticut career, Les is pleased: Assistant Forest Ranger ... Forest Ranger Grade 1 ... transferred to the Office of State Parks in 1964 ... Western District Park Supervisor to 1971 ... when the DEP was formed in 1971, he became Assistant Chief of Maintenance in the Operations and Maintenance Unit ... appointed Director of Division Services in 1981 ... Chief, Bureau of Operations Management and Services in 1989.

"I gave all I could to the state ... 100 percent," says Les. "I always made it a practice to talk to all workers. We're all equal. We just have different jobs."

In 1989, a total of 1,200 employees reported to Leslie Whitham ... 400 full-time and 800 seasonal workers.

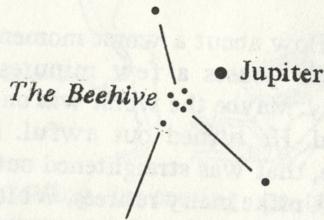
A simple, accurate summary of an outstanding man's State of Connecticut career: Les is more. ■

The Night Sky

Cancer, the Crab

by Francine Jackson

CANCER



As we mentioned last month, Jupiter is now the brightest object in the

nighttime sky. You may notice, however, that it seems to be stuck in an incredibly dark section directly over our heads. In fact, this part of the sky is so dark that if it hadn't been decided to assign a name to every part of the sky, there probably would not have been a constellation placed there.

However, within this area is a very little animal, Cancer, the crab. According to legend, Orion bragged that he was such a great hunter his goal in life was to kill all the animals in the world. This scared so many creatures that most would flee on hearing Orion approach. However, one little animal, the crab, decided to try his luck. He crept up to Orion, reached out with one of his claws, and began pinching Orion on the ankle. Orion, looking down, saw this pesky crab trying to bite his foot, picked up his leg and shook it, dislodging the crab, then promptly squashed the little animal

under his foot.

The other animals, seeing this act of courage, petitioned the gods to place the image of a crab in the sky as a symbol of heroism.

Cancer is roughly the shape of an upside-down "Y." At the crux of the "Y" is his heart, an open cluster that to ancient people resembled a swarm of bees -- hence its name, the Beehive. Jupiter has kindly moved just slightly to the west of the Beehive, so right now the cluster is incredibly easy to find. Simply move your eyes just a tad to Jupiter's left, and you're there. Although listed as a naked-eye object, you may want to train a set of binoculars on it.

Also, Happy Spring! The season begins at 11:03 p.m. EDT on Wednesday, March 20th. And because the next full moon is Saturday, March 30th, we will enjoy Easter this year on Sunday, March 31st.

Fuelwood Lottery

Applications for the 1991 State Fuelwood Program are now available from the Department of Environmental Protection's Division of Forestry.

As in past years, a lottery system will be used to allocate permits for two-cord and five-cord cutting areas. The total number of permits is similar to past years, with demand expected to be greatest in the south central and southwestern parts of the state.

For the fiscal year beginning July 1, 1991, 527 two-cord permits and 315 five-cord permits will be available state-wide.

Although the overall supply of cordwood readily accessible to the public is smaller each year, nearly 250,000 cords of wood have been sold from state lands during the past decade, with areas nearest population centers receiving the greatest pressure.

For administrative purposes, state lands are divided into 17 management units. A lottery applicant may indicate a first and second choice of management unit, and must choose either a two-cord or five-cord category. Two-cord lots are close to roads passable by pickup truck. Five-cord sites are located some distance from a road and will usually require a tractor or four-wheel drive pickup.

Application information includes a map showing the management areas and the number of permits to be issued by area.

Lottery applications and instructions are available in the State Office Building, 165 Capitol Avenue, Hartford: the Division of Forestry, Room 260, and Bureau of Environmental Services, Communications Division, Room 112. Forms are also available at major DEP field facilities and at Cooperative Extension Service offices.

The forms must be filled out completely and returned to DEP Division of Forestry, 165 Capitol Avenue, Hartford, CT 06106, no later than April

15, 1991.

Applicants should note that applications must be picked up and should be submitted as soon as possible.

The lottery will take about six weeks, according to State Forester Peter Babcock. All applicants will be notified by mail as to whether their name was selected or not. The mailing of actual permits will begin in early June.

The signed permit must be brought by the applicant or his agent to the forestry field office indicated with the permit. Payment of \$10.00 per cord will be due at the time permits are delivered. Failure to return the permit for validation will result in loss of cutting privileges.

Permits are issued over the entire 12-month period, Babcock notes. Although ice, snow, mud and other unusual conditions are considered, no guarantee is made as to a specific time of year or for a particular cutting location. Permittees are allowed 21 days to harvest two cords and 60 days to cut five cords.

Trailsider Botanizer



by
Gale W. Carter
Illustration by
Caryn Furbush

Coltsfoot

Tussilago farfara

Coltsfoot signals the coming of warmer days. This dandelion-like flower is one of the relatively few composites that makes its appearance in the spring.

The flower stalk, which supports a single blossom, emerges from a branching horizontal rootstalk. The bright yellow flower is approximately one inch wide and has narrow outer rows of fertile ray florets. The disk florets in the center are sterile. The long stalked leaves are round or heart-shaped and appear after the flowers begin to wither. They are toothed and hairy beneath and may be up to eight inches in width.

Coltsfoot ranges in height from six to 18 inches and is densely covered with white hairs and numerous red-

© Gale W. Carter 1991

dish scale-like leaves. Blossoming time is from March to June whereas the fruit, which is a dry, one-seeded achene, appears from May to July. Attached to each achene is a tuft of white hair. This plant is found growing along roadsides and waste places and on sites where there is moist soil.

The generic name *Tussilago* comes from the Greek word "tussis" meaning cough, while the species name is derived from *Folia farfarae*, an early medical name given to a concoction made from the plant.

An early name for coltsfoot was *Filius ante patrem* which means "the son after the father", a reference to the flower appearing before the leaves are produced. The common name coltsfoot comes from the similarity of the leaf to the hoofprint of a young horse.

Coltsfoot was long used in the treatment of many types of respiratory problems. The dried leaves were a major ingredient in British tobacco that was smoked for the relief of asthma and sore throat. It was also useful for the treatment of a variety of external ailments such as burns, swellings, insect bites and open sores.

Goldfinches use the tufts of hair found on the seeds to line their nests.

Letters to the Editor

Each month when I received my copy of *Connecticut Environment* I immediately opened to the "Editor's Comment" to get my dose of Bob Paier philosophy. If I had time for nothing else, I made time for this indulgence. I'm sure I'm not alone.

Bob was very kind and extremely talented. He could, in a few carefully chosen words, touch your conscience and your heart. His prose reached out to us all. In an admittedly bureaucratic and sometimes discouraging system, Bob encouraged us to stop and reflect on the importance of what we do and the simplicity of our mission -- to protect and respect that which gives us life. He reminded us that our mission is not merely accomplished in the hours we spend at D.E.P., but is an ethic for

life reflected in the choices we all make each day. Bob understood that truth and brought that message to us all.

I hope I will never become complacent about those around me who so enrich my life. Bob was one of those people. I will miss him and each month I will surely miss his words.

Robin Bray

I vote according to what I read about politicians who do (and do not) support environmental concerns.

Timothy Martyn
Northampton, MA

I think you are doing a great job. I find everything very interesting and am learning a great deal about our beautiful state.

Thank you.

Robert Dickerson
Higganum

Endnote

"If I am a gentleman and you are a gentleman, who will milk the cow?"

Irish folk saying

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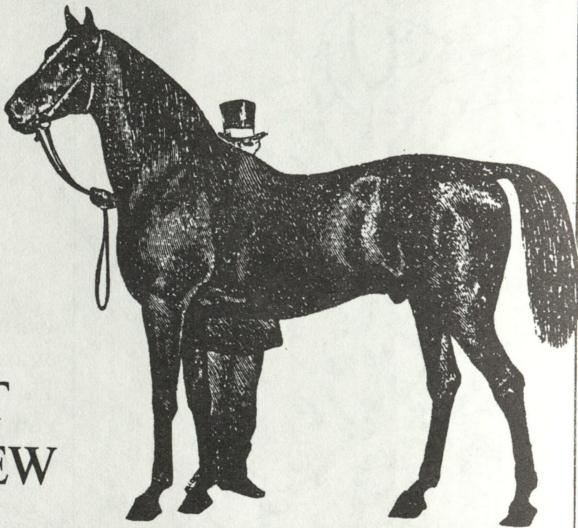
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